US

1/17

FIG.1

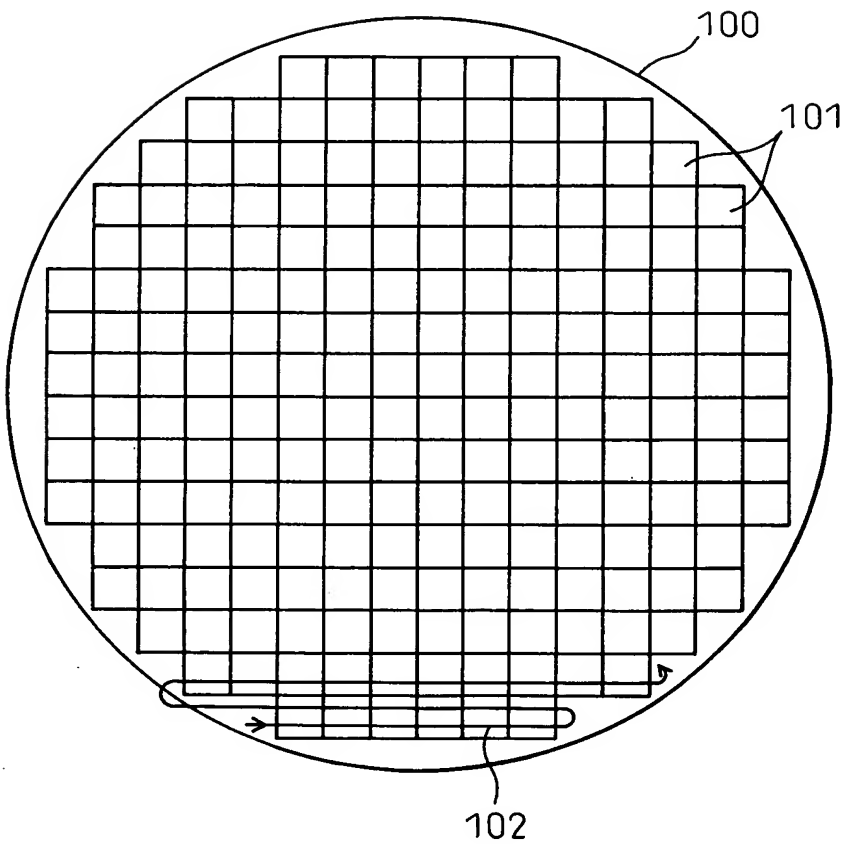


FIG.2

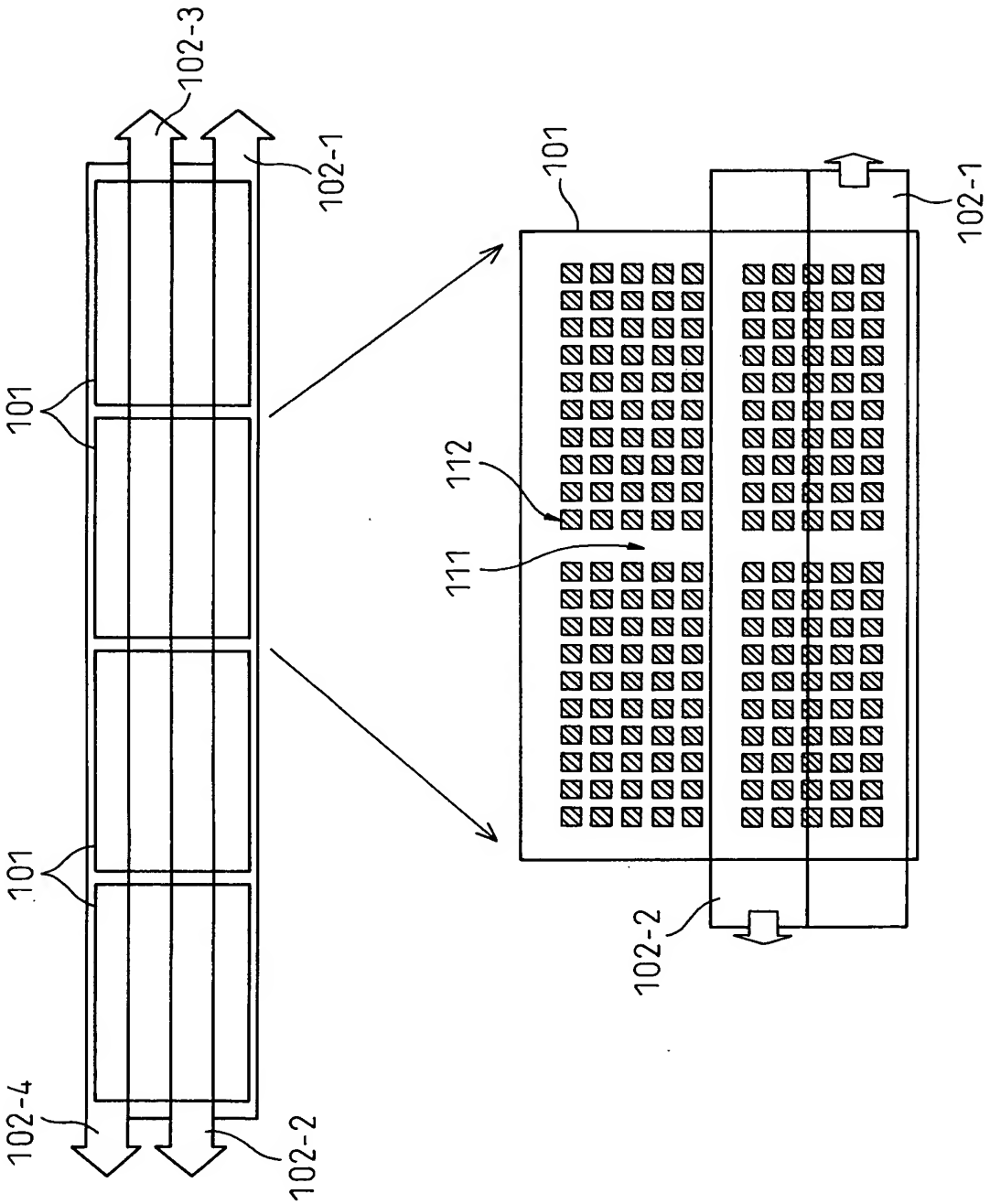


FIG.3A

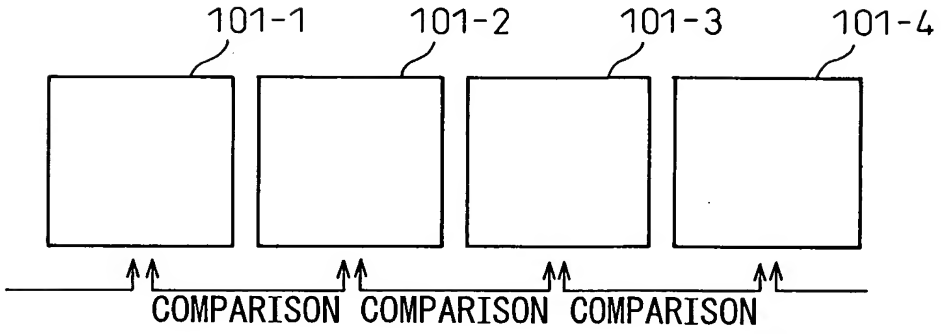


FIG.3B

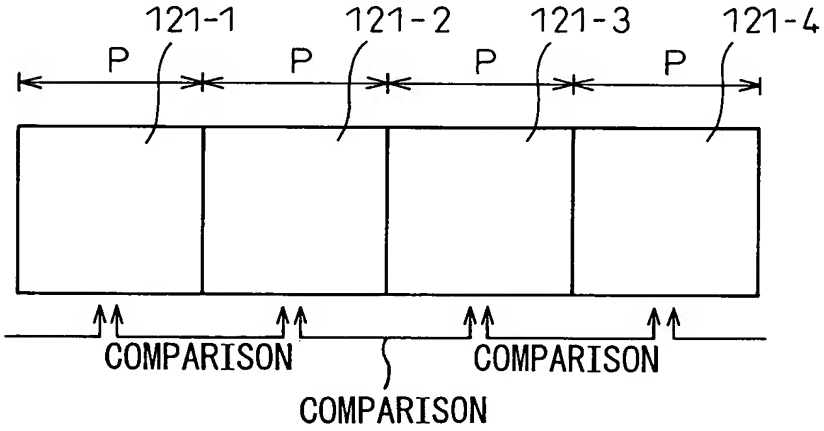


FIG.3C

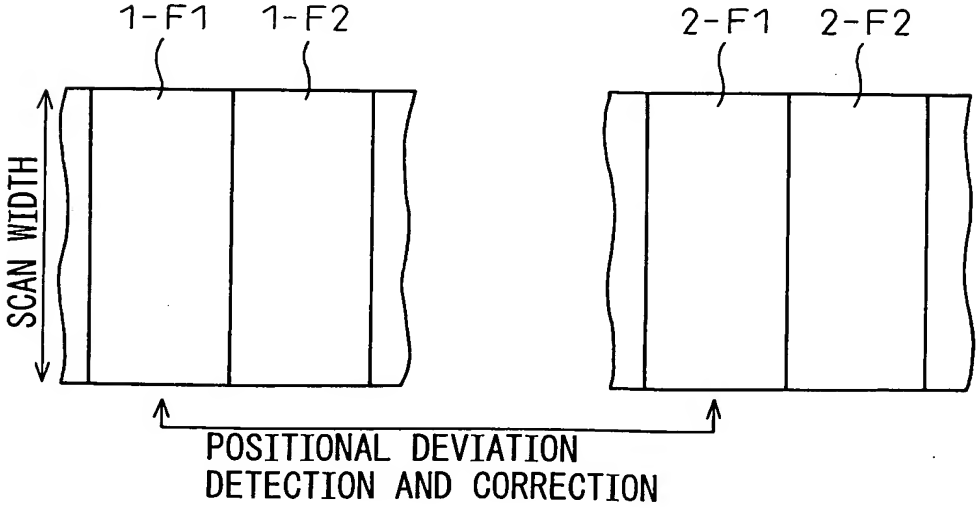


FIG. 4

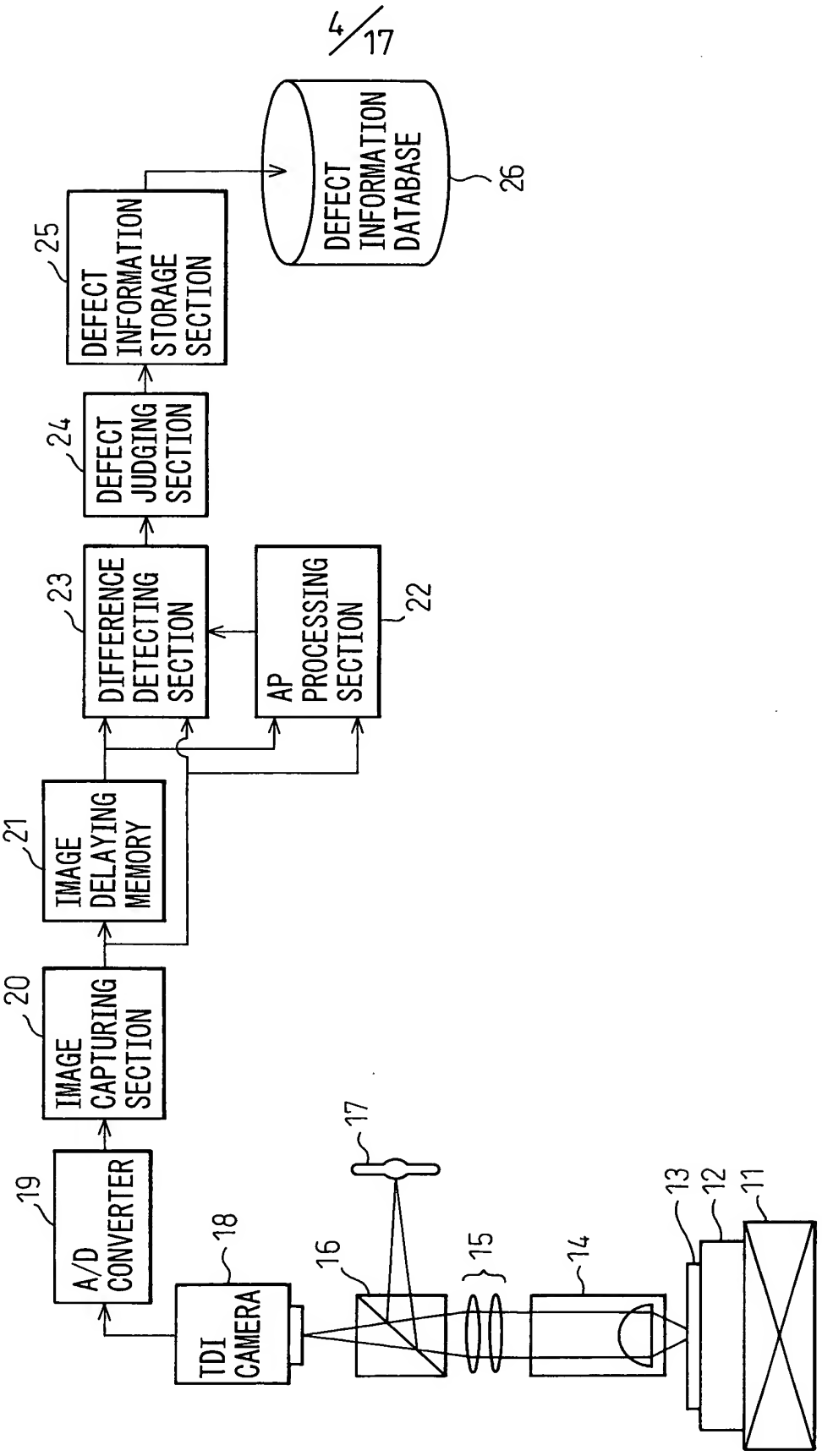

DEFECT INFORMATION DATABASE
26
DEFECT INFORMATION STORAGE SECTION
25
DEFECT JUDGING SECTION
24
DIFFERENCE DETECTING SECTION
23
AP PROCESSING SECTION
22
IMAGE DELAYING MEMORY
21
IMAGE CAPTURING SECTION
20
A/D CONVERTER
19
TDI CAMERA
18
17
16
15
14
13
12
11

FIG.5

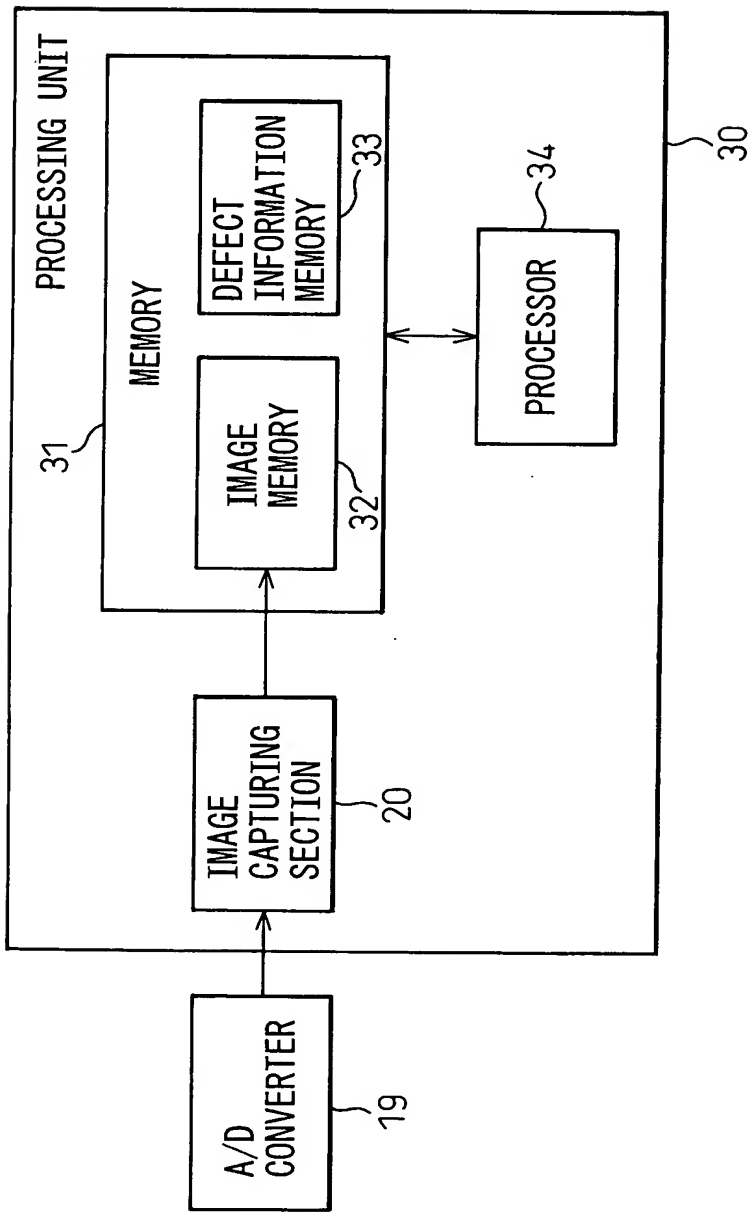

PROCESSING UNIT
30
MEMORY
31
DEFECT INFORMATION MEMORY
33
IMAGE MEMORY
32
PROCESSOR
34
IMAGE CAPTURING SECTION
20
A/D CONVERTER
19

FIG.6A

DIE COMPARISON INSPECTION

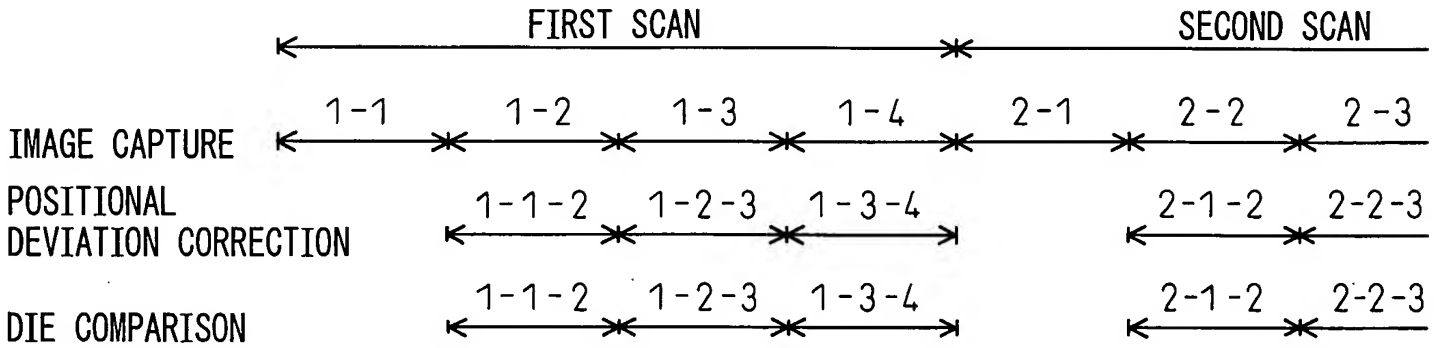
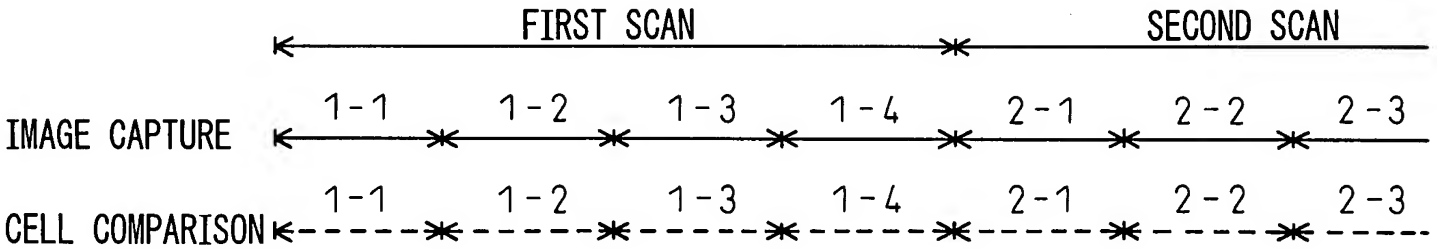


FIG.6B

CELL COMPARISON INSPECTION



Attorney: D. Bruce Prout
Docket No.: 51971/DBP/A400
Inventor(s): Naoya Takeuchi
Title: PATTERN INSPECTION METHOD AND APPARATUS

FIG.7

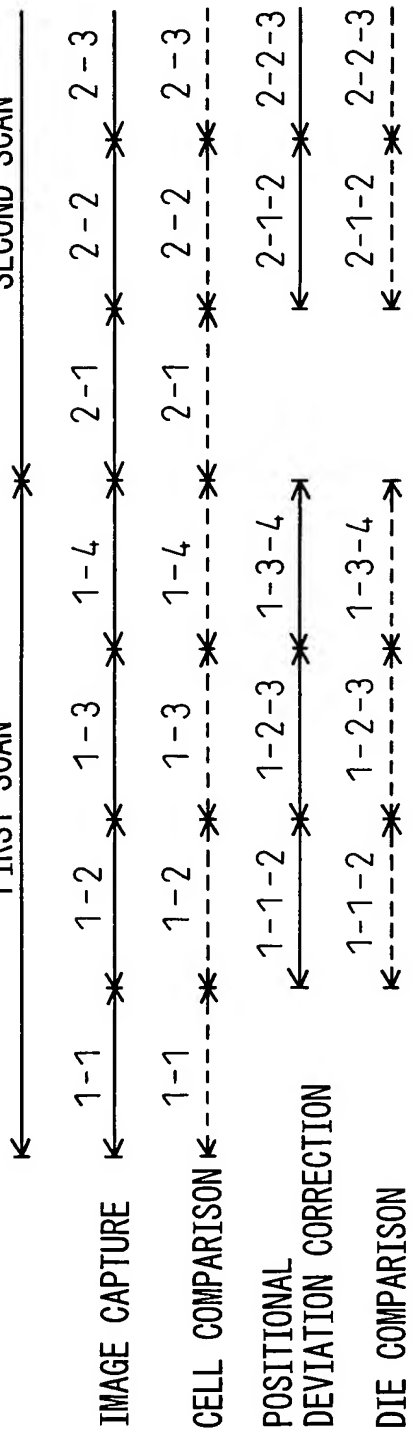

FIRST SCAN
SECOND SCAN
IMAGE CAPTURE
CELL COMPARISON
POSITIONAL DEVIATION CORRECTION
DIE COMPARISON
1-1
1-2
1-3
1-4
2-1
2-2
2-3
1-1-2
1-2-3
1-3-4
2-1-2
2-2-3

FIG.8

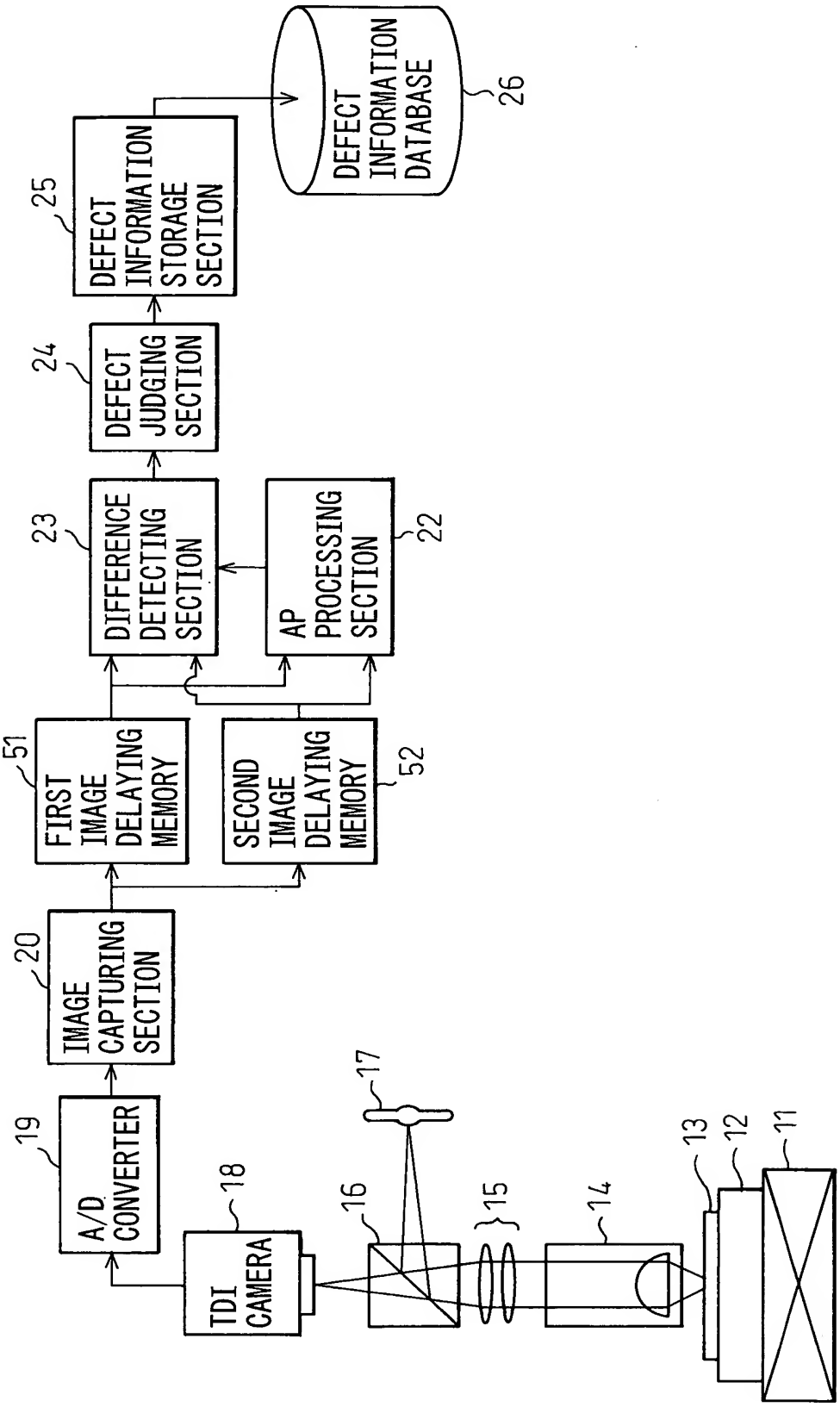

DEFECT INFORMATION DATABASE
26
DEFECT INFORMATION STORAGE SECTION
25
DEFECT JUDGING SECTION
24
DIFFERENCE DETECTING SECTION
23
AP PROCESSING SECTION
22
FIRST IMAGE DELAYING MEMORY
51
SECOND IMAGE DELAYING MEMORY
52
IMAGE CAPTURING SECTION
20
A/D CONVERTER
19
TDI CAMERA
18
17
16
15
14
13
12
11

FIG.9

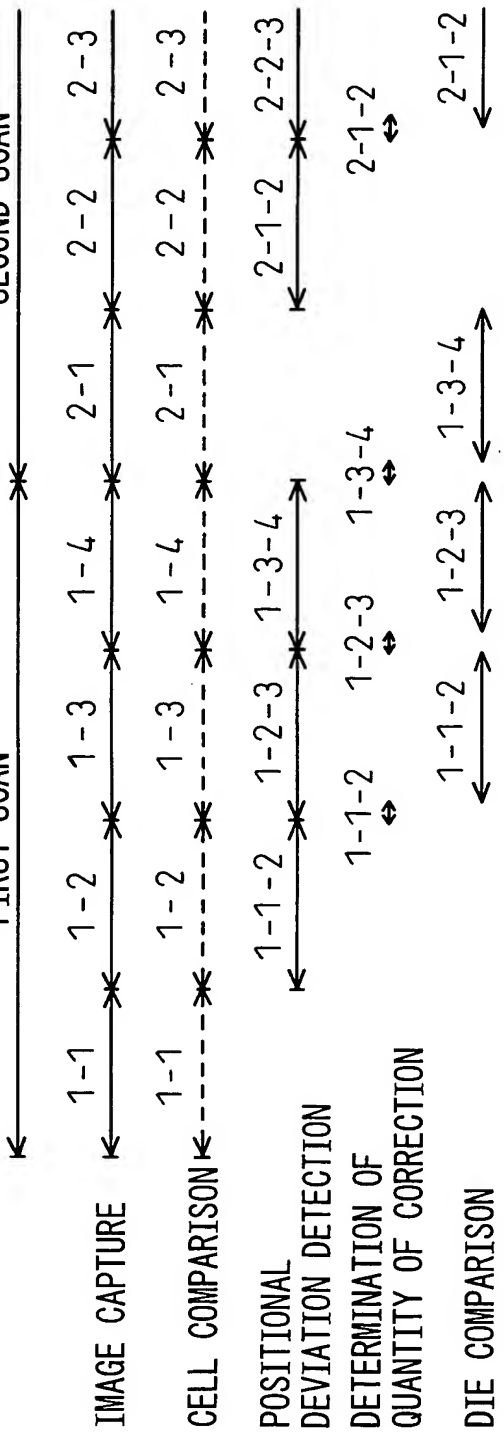

FIRST SCAN
SECOND SCAN
IMAGE CAPTURE
1-1
1-2
1-3
1-4
2-1
2-2
2-3
CELL COMPARISON
1-1
1-2
1-3
1-4
2-1
2-2
2-3
POSITIONAL DEVIATION DETECTION
1-1-2
1-2-3
1-3-4
2-1-2
2-2-3
DETERMINATION OF QUANTITY OF CORRECTION
1-1-2
1-2-3
1-3-4
2-1-2
DIE COMPARISON
1-1-2
1-2-3
1-3-4
2-1-2

FIG.10

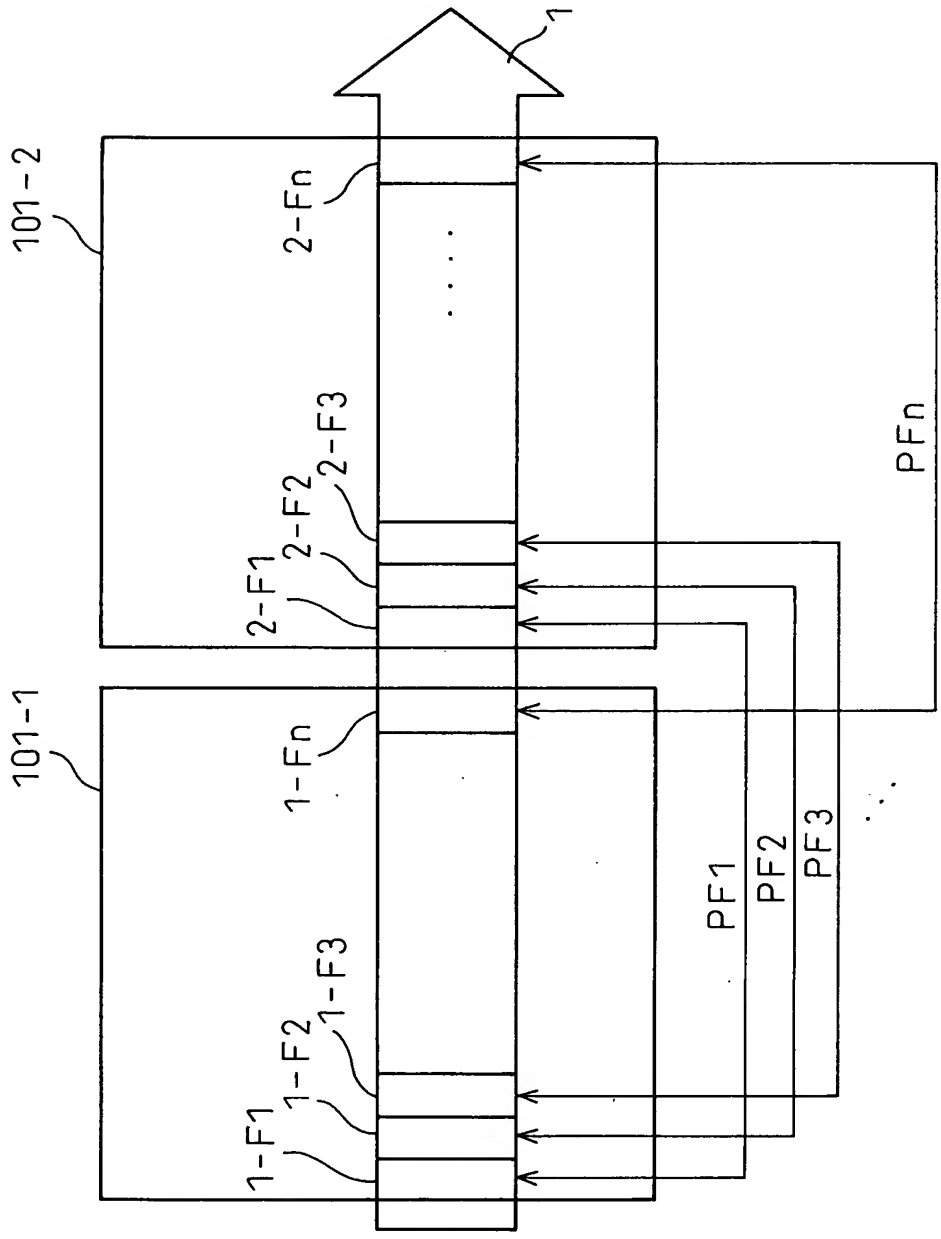


FIG.11

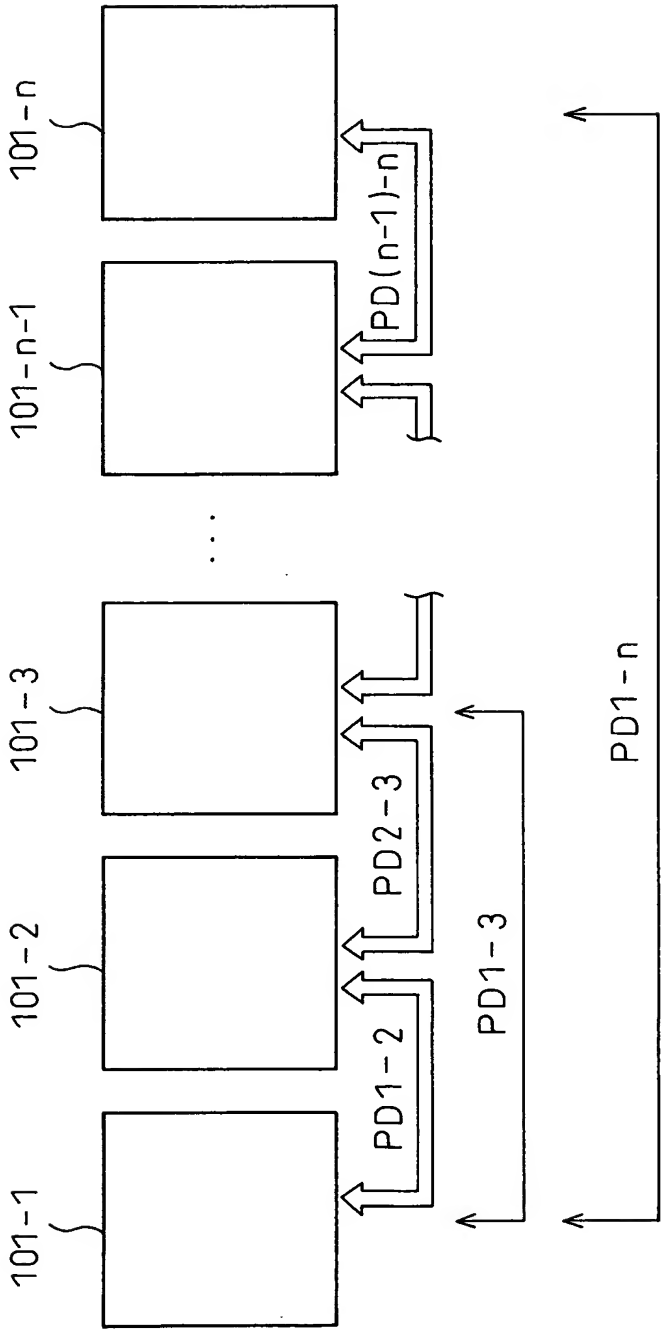


FIG.12

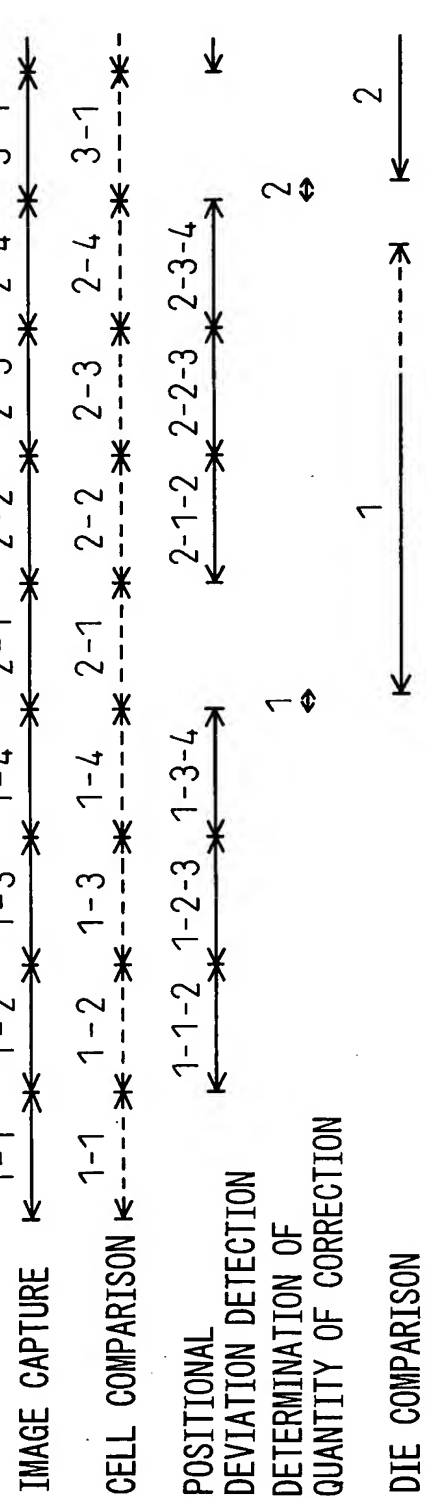

FIRST SCAN
SECOND SCAN
THIRD SCAN
IMAGE CAPTURE
1-1
1-2
1-3
1-4
2-1
2-2
2-3
2-4
3-1
CELL COMPARISON
1-1
1-2
1-3
1-4
2-1
2-2
2-3
2-4
3-1
POSITIONAL DEVIATION DETECTION
1-1-2
1-2-3
1-3-4
2-1-2
2-2-3
2-3-4
DETERMINATION OF QUANTITY OF CORRECTION
1
2
DIE COMPARISON
1
2

FIG.13A

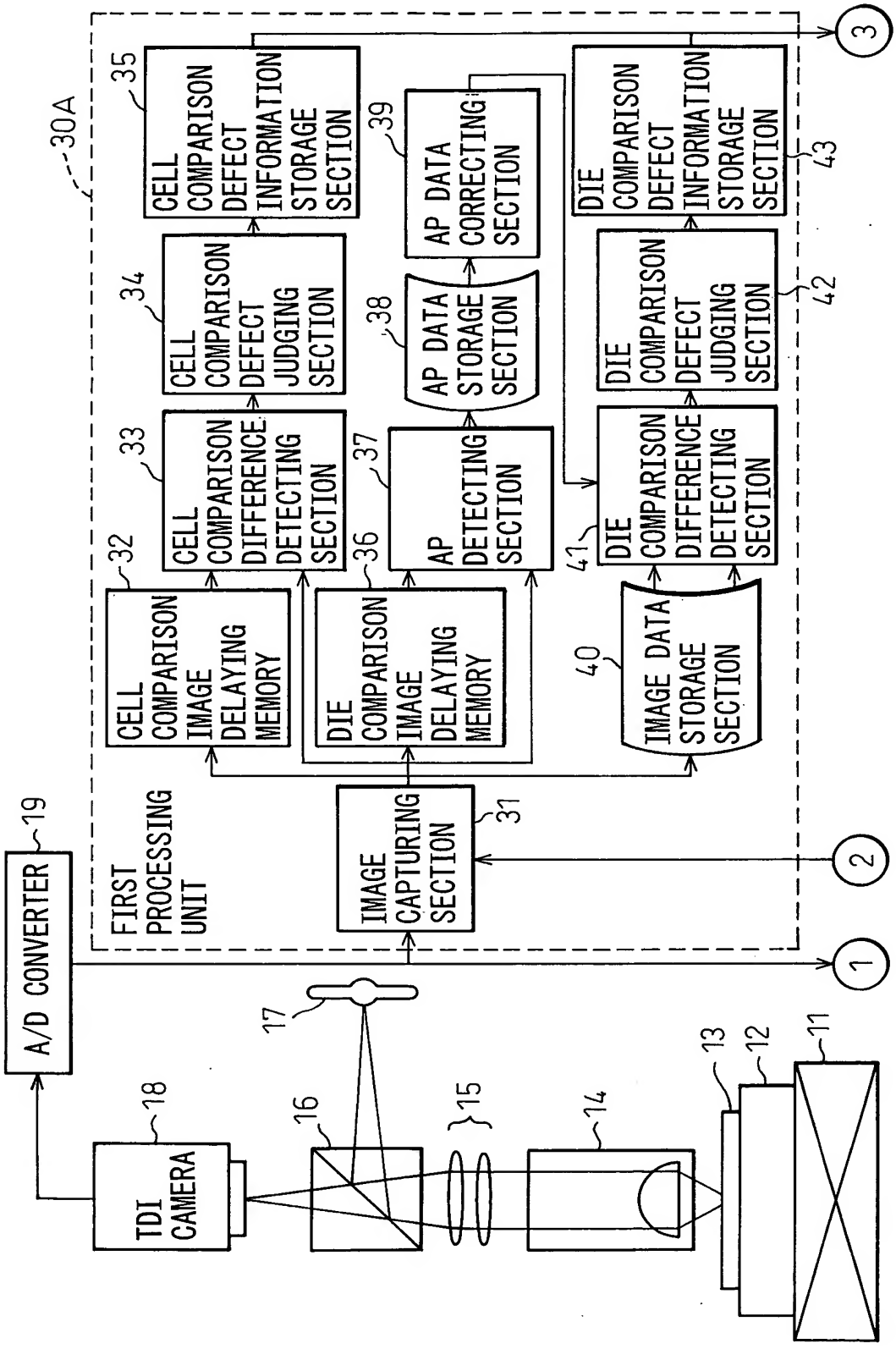

TDI CAMERA
18
A/D CONVERTER
19
FIRST PROCESSING UNIT
30A
IMAGE CAPTURING SECTION
31
CELL COMPARISON IMAGE DELAYING MEMORY
32
DIE COMPARISON IMAGE DELAYING MEMORY
36
IMAGE DATA STORAGE SECTION
40
CELL COMPARISON DIFFERENCE DETECTING SECTION
33
AP DETECTING SECTION
37
DIE COMPARISON DIFFERENCE DETECTING SECTION
41
CELL COMPARISON DEFECT JUDGING SECTION
34
AP DATA STORAGE SECTION
38
DIE COMPARISON DEFECT JUDGING SECTION
42
CELL COMPARISON DEFECT INFORMATION STORAGE SECTION
35
AP DATA CORRECTING SECTION
39
DIE COMPARISON DEFECT INFORMATION STORAGE SECTION
43
1
2
3
11
12
13
14
15
16
17

FIG. 13B

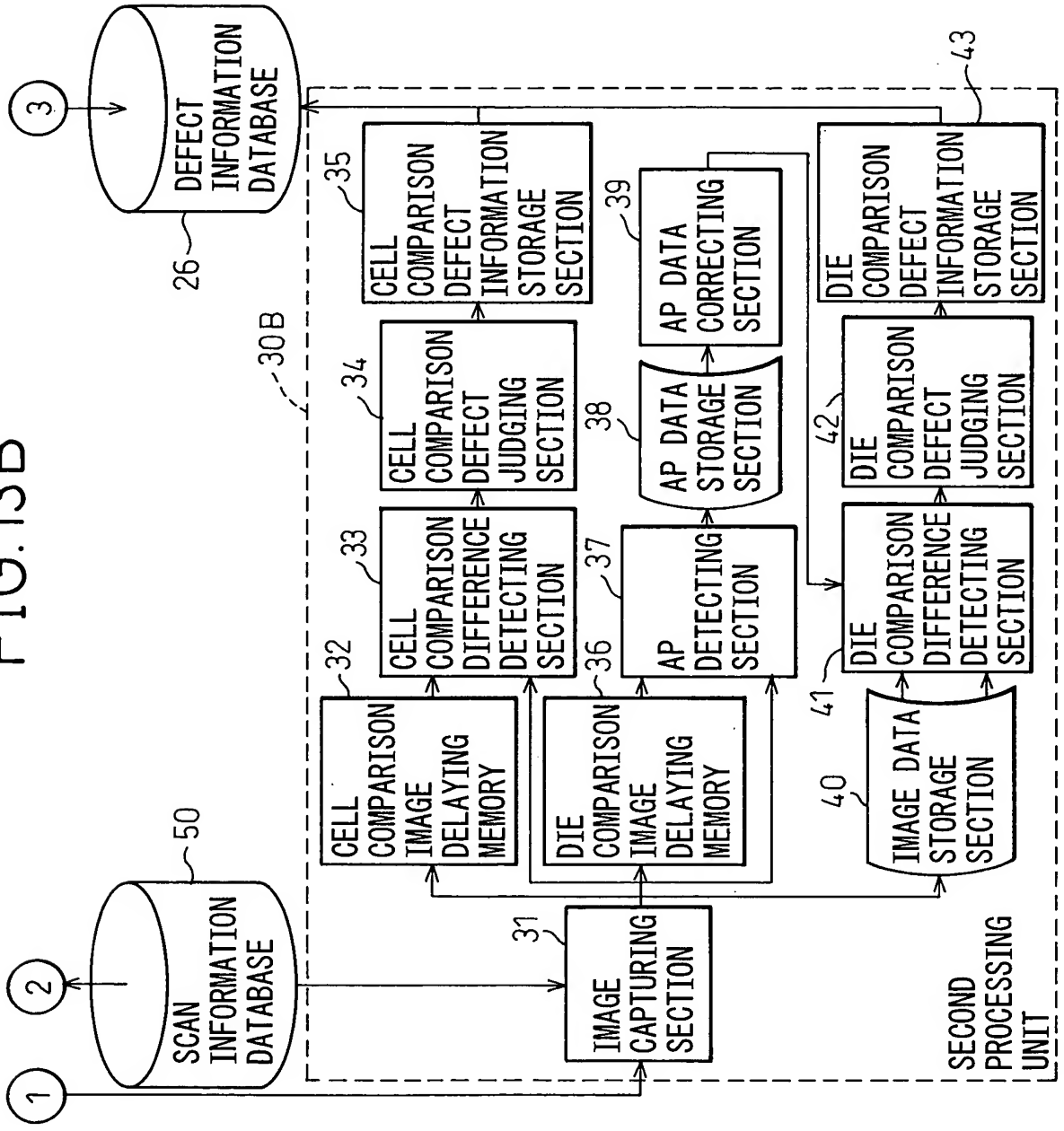

1
2
3
SCAN INFORMATION DATABASE
50
DEFECT INFORMATION DATABASE
26
30B
SECOND PROCESSING UNIT
IMAGE CAPTURING SECTION
31
CELL COMPARISON IMAGE DELAYING MEMORY
32
DIE COMPARISON IMAGE DELAYING MEMORY
36
CELL COMPARISON DIFFERENCE DETECTING SECTION
33
AP DETECTING SECTION
37
CELL COMPARISON DEFECT JUDGING SECTION
34
AP DATA STORAGE SECTION
38
AP DATA CORRECTING SECTION
39
CELL COMPARISON DEFECT INFORMATION STORAGE SECTION
35
IMAGE DATA STORAGE SECTION
40
DIE COMPARISON DIFFERENCE DETECTING SECTION
41
DIE COMPARISON DEFECT JUDGING SECTION
42
DIE COMPARISON DEFECT INFORMATION STORAGE SECTION
43

FIG.14

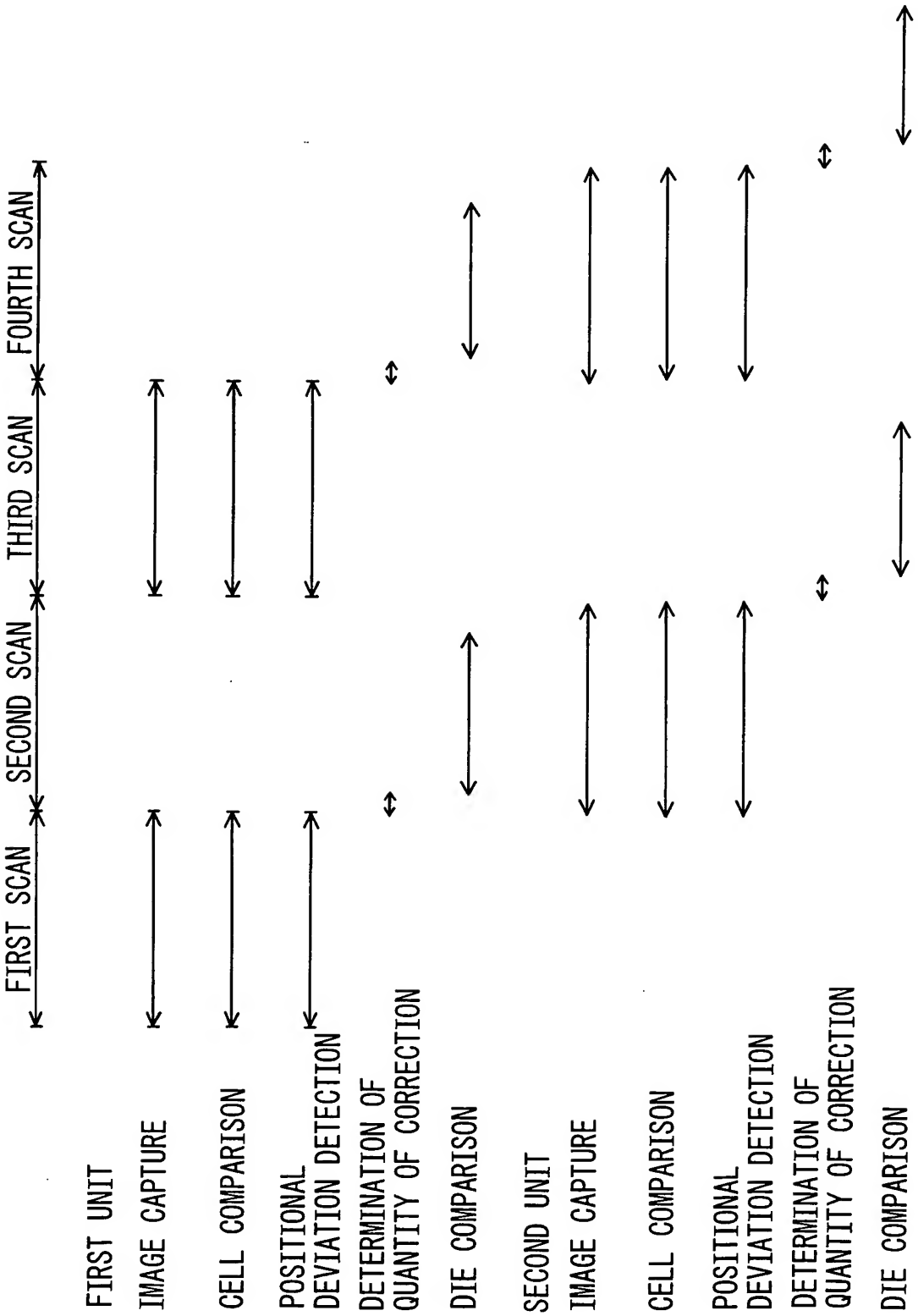

FIRST SCAN
SECOND SCAN
THIRD SCAN
FOURTH SCAN
FIRST UNIT
IMAGE CAPTURE
CELL COMPARISON
POSITIONAL DEVIATION DETECTION
DETERMINATION OF QUANTITY OF CORRECTION
DIE COMPARISON
SECOND UNIT
IMAGE CAPTURE
CELL COMPARISON
POSITIONAL DEVIATION DETECTION
DETERMINATION OF QUANTITY OF CORRECTION
DIE COMPARISON

FIG.15

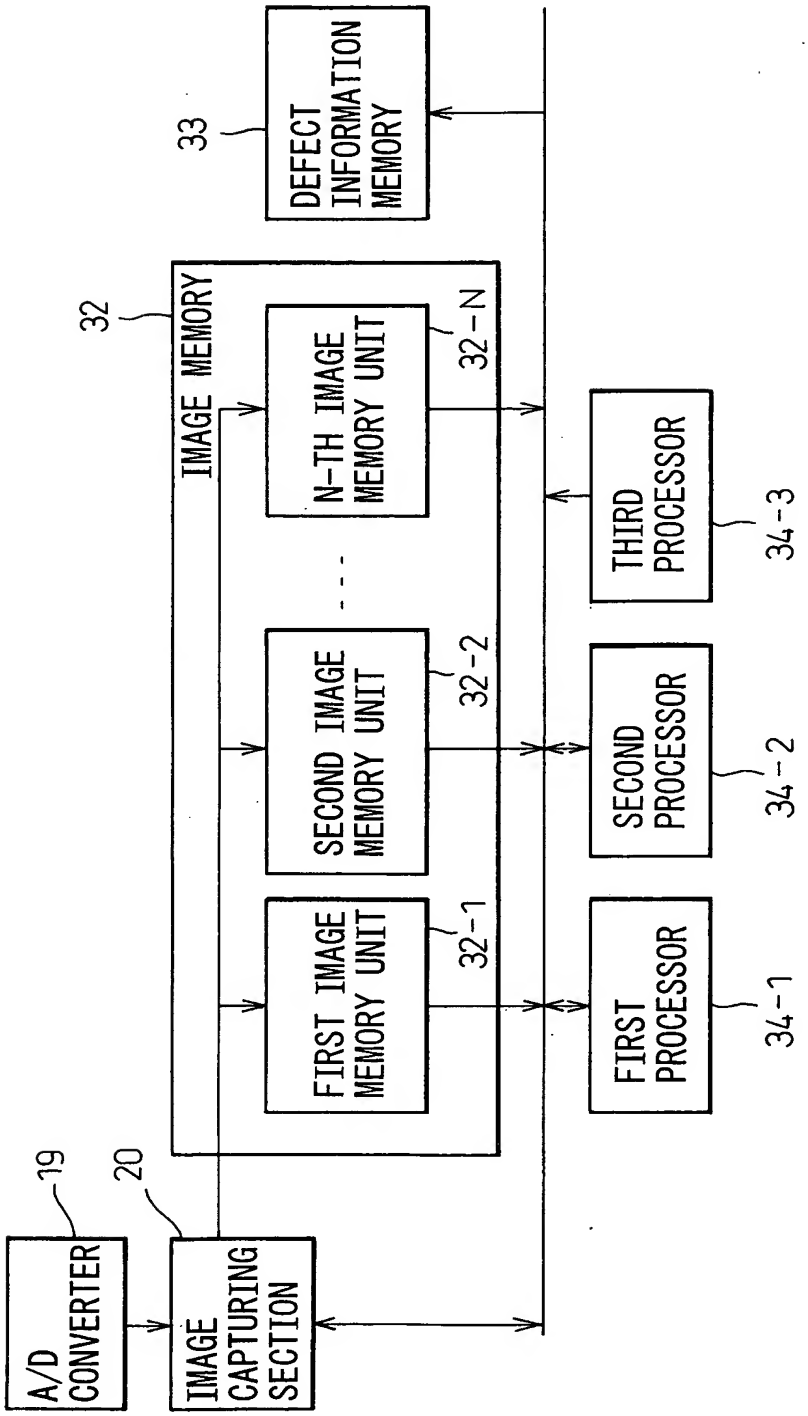
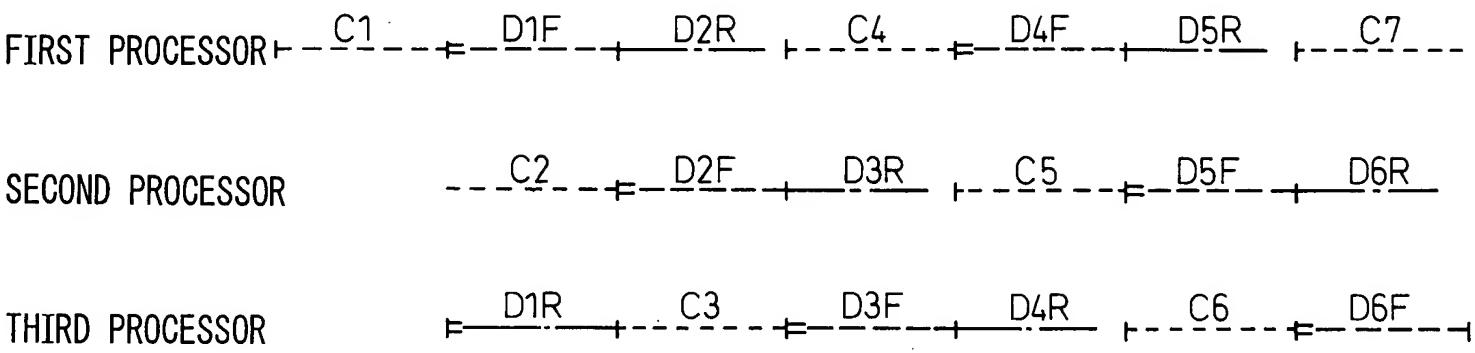

A/D CONVERTER
19
IMAGE CAPTURING SECTION
20
IMAGE MEMORY
32
FIRST IMAGE MEMORY UNIT
32-1
SECOND IMAGE MEMORY UNIT
32-2
N-TH IMAGE MEMORY UNIT
32-N
DEFECT INFORMATION MEMORY
33
FIRST PROCESSOR
34-1
SECOND PROCESSOR
34-2
THIRD PROCESSOR
34-3

FIG.16



CN — CELL COMPARISON AND POSITIONAL DEVIATION DETECTION IN N-TH ROW

= DETERMINATION OF QUANTITY OF CORRECTION

DNF — DIE COMPARISON IN FIRST HALF IN N-TH ROW

DNR — DIE COMPARISON IN SECOND HALF IN N-TH ROW

Attorney: D. Bruce Prout
Docket No.: 51971/DBP/A400
Inventor(s): Naoya Takeuchi
Title: PATTERN INSPECTION METHOD AND APPARATUS

Sheet 17 of 17